

WHAT IS CLAIMED:

1. A batch reaction process for producing polyalkenyl acylating agent comprising reaction of at least one polyalkene and at least one mono- or dicarboxylic acid or anhydride producing compound at a reaction temperature of from about 180°C to about 300°C, wherein upon at least substantial completion of said reaction, the reaction mixture is allowed to cool to a temperature at which the reaction rate between the polyalkene and the mono- or dicarboxylic acid or anhydride producing compound is no more than about 40% of the peak reaction rate during said reaction, additional amount of olefinic mono- or dicarboxylic acid or anhydride producing compound is added to the cooled reaction mixture, and the resulting mixture is maintained in the reactor for a period of time to cause solubilization of reactor tar.
2. The process of claim 1, wherein said reaction temperature is from about 210°C to about 250°C.
3. The process of claim 1, wherein said reaction is conducted at a pressure of from about 0 to about 1000 kPag.
4. The process of claim 3, wherein said pressure is from about 0 to about 400 kPag.
5. The process of claim 1, wherein the polyalkene and mono- or dicarboxylic acid or anhydride producing compound are reacted in a molar ratio of from about 0.9:1 to about 3:1.
6. The process of claim 5, wherein said molar ratio is from about 1.6:1 to about 2.4:1.
7. The process of claim 1, wherein said polyalkene has a number average molecular weight of from about 300 to about 5000.
8. The process of claim 1, wherein said polyalkene has a number average molecular weight of from about 900 to about 2500.
9. The process of claim 7, wherein said polyalkene is polyisobutene.
10. The process of claim 7, wherein said polyalkene has a terminal vinylidene content of at least about 30 %.

11. The process of claim 7, wherein said polyalkenyl acylating agent has a functionality of from about 1 to about 2.
12. The process of claim 11, wherein said functionality is from about 1.3 to about 1.7.
13. The process of claim 1, wherein said mono- or dicarboxylic acid or anhydride producing compound is maleic anhydride.
14. The process of claim 1, wherein the reactant mono- or dicarboxylic acid or anhydride producing compound is introduced into the reactor in multiple stages.
15. The process of claim 1, wherein the reaction is conducted in the presence of an amount of an oil soluble sulfonic acid.
16. The process of claim 15, wherein said sulfonic acid is introduced into said reactor after at least 50 % of the polyalkene has reacted with said mono- or dicarboxylic acid or anhydride producing compound.
17. The process of claim 10, wherein said reaction is conducted in the presence of an amount of a free radical inhibitor.
18. The process of claim 17, wherein said free radical inhibitor is substituted or unsubstituted phenothiazine.
19. The process of claim 1, wherein said additional amount of mono- or dicarboxylic acid or anhydride producing compound is from about 1 wt. % to about 10 wt. %, based on the weight of polyalkene reactant.
20. The process of claim 1, wherein the resulting mixture is maintained in the reactor for a period of time of from about 0.5 to about 1 hour.
21. The process of claim 1 comprising at least one of the further steps of stripping excess mono- or dicarboxylic acid or anhydride producing compound, adding a hydrocarbon solvent, and filtering the reaction product.

22. The process of claim 21 comprising the reacting of the reaction product with a nucleophilic reactant.
23. The process of claim 22, wherein said nucleophilic reactant is selected from the group consisting of amine, alcohol, amino-alcohol, metal compound, and mixtures thereof.
24. The process of claim 23, wherein the reaction product is reacted with the nucleophilic reactant in diluent oil that is at least substantially free from sulfur.